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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,205	06/22/2001	Ralf Wolleschensky	P66760US0	6182

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WASHINGTON, DC 20004

EXAMINER

LAVARIAS, ARNEL C

ART UNIT	PAPER NUMBER
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2872

DATE MAILED: 05/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/857,205

Applicant(s)

WOLLESCHEMSKY, RALF 

Examiner

Arnel C. Lavarias

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/22/01, 7/17/01.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-65 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-65 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Response to Amendment

1. The cancellation of Claims 1-11, including the claims numbered 2a and 3a, in Paper No. 3, dated 6/22/01, is acknowledged and accepted.
2. The addition of Claims 12-65 in Paper No. 3, dated 6/22/01, is acknowledged and accepted.

Specification

3. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.

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- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

4. The disclosure is objected to because of the following informalities:

Cross-References to Related Applications- heading and content missing

Background of the Invention- heading and content missing

Brief Summary of the Invention- heading and content missing

Brief Description of the Several Views of the Drawing(s)- heading and content missing

Detailed Description of the Invention- heading missing

Claim or Claims- heading missing.

Appropriate correction is required.

5. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claims 46-48 recite the limitation that the fluorescence microscope includes at least one glass fiber for feeding in excitation light. However, the specification of the disclosure fails to disclose the use of optical fibers as a means for guiding excitation light from the source.

Drawings

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the 'at least one glass fiber for feeding in excitation light' (See Claims 46-48) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

7. Claims 21, 40, and 53 are objected to because of the following informalities:

Claim 21, line 1- delete the period after 'element'

Claim 40, line 2- 'unvapourized' should read 'vapourized'. The Examiner notes that the embodiment describing the one light *reflecting* element is disclosed as being a vapourized prism (See Paragraph 0002 of Applicant's disclosure), and is interpreted as such for the purposes of examination of Claim 40.

Claim 53 recites the limitation "the acousto-optical elements" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. The Examiner notes that this limitation implies multiple acousto-optical elements, however, Claims 28 and 30 only recite a single acousto-optical element. For the purposes of the examination of Claim 53, this limitation has been interpreted to mean a single acousto-optical element.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claim 56 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 56 recites the limitation that the radiation of the plurality of lasers in the direction of the microscope optics be successively fed into the microscope beam path in a sequence based on decreasing wavelength. In reviewing the specification and drawings of the disclosure, the Applicants disclose that a plurality of sources may be utilized in the fluorescence microscope (See Paragraph 00015 and Figure 4 of Applicant's disclosure). However, no disclosure is made of successively feeding the radiation of the plurality of lasers into the microscope beam path in the direction of the microscope optics in a sequence based on decreasing wavelength. Additionally, no reasoning or functional criticality is given as to why such a sequence is required for the claimed fluorescence microscope.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 12-18, 20, 22-32, 37-39, 43-45, 49, 53-55, 57, 63-65 are rejected under 35 U.S.C. 102(b) as being anticipated by Kobayashi (U. S. Patent No. 5691839).

Kobayashi discloses a fluorescence scanning confocal microscope (See Figure 1), comprising a radiation source such as a laser (See 1 in Figure 1; col. 4, line 64-col. 5, line 14) which emits excitation light for irradiating a sample (See 15 in Figure 1); a detection device (See 26 in Figure 1) for detection of emission light emitted by the sample; an excitation and detection pinhole (See 24 in Figure 1); microscope optics (See for example 9-14, 16-22 in Figure 1) for directing excitation light to the sample and for directing emission light back in the direction of the radiation source and detection device; a plurality of acousto-optic elements (See either 4 or 8 in Figure 1; inherently, such acousto-optical devices are able to adjust the intensity, wavelength of the incident light based on adjustments on the applied acoustic wave on the Bragg cell of the acousto-optical device) for diffracting excitation light into multiple orders, such as the zero and first order (See col. 8, lines 25-39), and which is positioned between the radiation source and microscope optics in such a way that diffracted excitation light can be introduced into the microscope optics, wherein the emission light emitted by the sample has fractions of excitation light and fractions of wavelength –shifted fluorescence light (it is noted that

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upon excitation by the source, the sample will emit its characteristic fluorescence, as well as specularly and diffusely reflect and transmit a portion of the source light), excitation light emitted by the sample can be deflected in the direction of the radiation source by diffraction by the acousto-optic device, and wavelength-shifted fluorescence light emitted by the sample can be transmitted undiffracted through the acousto-optic element and is spatially separable from excitation light fractions of the emission light, and wherein the detection device is so positioned with respect to the acousto-optic element that wavelength-shifted fluorescence light transmitted undiffracted through the acousto-optic element can be detected by means of the detection device, and further comprising a filter device (See 25F in Figure 1) which for the selective detection of wavelength-shifted fluorescence light in the detection device is positioned between the acousto-optic element and the detection device, and at least one reflecting element (See 4, 8, or 2 in Figure 1) for influencing the light direction and for separating the light fractions, which is located in at least one of an excitation beam path upstream of the acousto-optic element and a detection beam path downstream of the acousto-optic element.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

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13. Claims 19, 21, 33-36, 40-42, 46-48, 51, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi.

With regard to Claims 21, 33-36, Kobayashi discloses the invention as set forth above, except for the optical element being a light refracting element, such as an unvaporized prism. The Examiner notes that the optical element of Kobayashi (See for example 2 in Figure 1) is a simple wavelength dependent beamsplitter performing a light fraction separation function. It is well known in the art that prisms similarly perform such a wavelength separation function based on the refractive properties of the prism material. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the optical element be a light refracting element, such as an unvaporized prism, for the purpose of simplifying the optical layout of the system and reducing the cost, size, and weight of the system.

With regard to Claim 40, Kobayashi discloses the invention as set forth above, except for the reflecting element being a vaporized prism. The Examiner notes that the optically dispersive properties of a prism are not actually critical to the function of the fluorescence microscope in this embodiment, and hence the vaporized prism only acts as a reflector for the purpose of performing a light fraction separation function. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the reflecting element be a vaporized prism for the purpose of simplifying the optical layout of the system and reducing the cost, size, and weight of the system.

With regard to Claims 19, 41-42, 51, Kobayashi discloses the invention as set forth above. In particular, Kobayashi discloses the acousto-optic elements being acousto-optic

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deflector elements. Kobayashi lacks these acousto-optic deflector elements being an acousto-optic modulator and then an acousto-optic tunable filter in the direction of the microscope optics. The Examiner notes that it is well known in the art that acousto-optic deflectors, modulators, and tunable filters are all the same devices based on the acousto-optic effect in a Bragg cell. Hence all diffract, modulate, and tune light in the same way, based on the applied acoustic wave onto the device. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the acousto-optic deflectors be an acousto-optic modulator and then an acousto-optic tunable filter in the direction of the microscope optics for the purpose of providing additional intensity and wavelength adjustability for optimizing the operation of the fluorescence microscope.

With respect to Claims 46-48, Kobayashi discloses the invention as set forth above, except for the fluorescence microscope further including at least one glass fiber provided for feeding in excitation light. It is well known in the art of optical microscopy and optical spectroscopy to utilize optical fibers to guide excitation light from a source to a sample, as well as to guide emission light from a sample to a detection system, for the purpose of reducing the optical system complexity, size, cost, and weight, as well as for providing a flexible means of routing light within the optical system.

14. Claims 50, 52, 56, 58-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Asakawa (JP 01282515).

With regard to Claims 50, 52, 58-62, Kobayashi discloses the invention as set forth above, except for the radiation source being constructed as a plurality of lasers having

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different wavelengths and a plurality of acoustic-optical elements being provided and with each laser is associated at least one acousto-optical element. However, Asakawa teaches an optical microscope (See Figures 1 or 4) wherein the optical source and acousto-optical devices are provided as a plurality of optical laser sources (See 1, 2, 3 of Figure 1 or 4) and as a plurality of acousto-optical modulator devices (See 7, 8, 9 in Figures 1 or 4), respectively, such that different wavelengths can be simultaneously fed into the microscope beam path (See Figures 1 or 4). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the radiation source be constructed as a plurality of lasers having different wavelengths and a plurality of acoustic-optical elements be provided and with each laser is associated at least one acousto-optical element, as taught by Asakawa, in the fluorescence microscope of Kobayashi, for the purpose of simplifying the optical detection system as well as reduce the cost of the optical system.

Further, with regard to Claim 56, Kobayashi in view of Asakawa discloses the invention as set forth above. Asakawa additionally discloses that the light beams of the three lasers (See 1, 2, 3 in Figure 1 or 4) are switchable in order with time according to the applied high frequency signal applied to the acousto-optical modulator (See 7, 8, 9 in Figures 1 or 4; Abstract). However, Kobayashi in view of Asakawa lacks the radiation of the plurality of lasers being fed into the microscope path in a sequence based on decreasing wavelength. It would have been obvious to one having ordinary skill in the art at the time the invention was made to adjust the timing sequence of the lasers of Kobayashi in view of Asakawa such that the radiation of the plurality of lasers are fed

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into the microscope path in a sequence based on decreasing wavelength since the order or sequence of the radiation of the lasers entering the microscope beam path is not critical to the operation of the function of the fluorescence microscope, and one skilled in the art would know to adjust the order or sequence based on time of arrival of the excitation pulse onto the sample, as per the intended application.

Conclusion

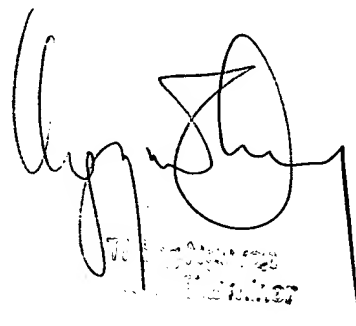
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM EST.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias
May 14, 2003



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